Hamilton County Climate Initiative

DEVELOPMENT GREEN GUIDE

This document contains a straightforward checklist of options for local governments, businesses, individuals/households and schools to reduce energy consumption and costs for land development and redevelopment within our communities. It has been developed specifically for smaller local governments with limited resources that nevertheless need a customized approach to energy management. The specific topics addressed in this Green Guide are listed below:

- **Smart Growth, Mixed Use and Compact Development**
- **Zoning to Decrease Carbon Emissions**
- **Parking Area Development**
- **Incentives for Green Development**
- **Building Material Choices**
- **Greening Landscape Practices**

Each section contains Fast Facts, a checklist of potential actions that can be adopted, background WEB resources and additional references for the interested reader.

Strategy: Smart Growth, Mixed Use and Compact Development

Fast facts

- Nine out of ten Americans want states to fund refurbishment and improvement of existing communities rather than new, sprawling development (NRDC, 2007).
- Of people planning to buy a home in the next three years, 87% prefer a short commute (NRDC, 2007).
- Higher density housing facilitates more walkable communities, because neighborhood shopping and schools within walking distance become financially feasible, with enough people living in a small area (NABH, 2009).
- Dense land use patterns that offer more mixed-use opportunities and smaller unit options can assist with lowering housing prices, reducing transportation costs, and providing access to needed amenities (RMLUI, 2209).
- Residents of "smart growth" communities drive as little as one-fifth as residents of conventional sprawl developments (NRDC, 2007).
- Mixed land use reduces disruption and fragmentation of habitat and provides wildlife corridors (UDOT, 2003).

Actions for: **G** (local governments), **B** (businesses), **I** (individuals / households) or **S** (schools)				
G				Strengthen and direct development towards existing communities.
G				Pursue consensus and partnership among the developers, the existing community and the public sector regarding public space goals and management strategies.
G				Make development decisions predictable, fair and cost-effective.
G				Conduct a Smart Growth Audit of your community's planning policies, zoning code and other land-use codes/regulations
G				Prepare a comprehensive development plan emphasizing smart growth principles.
G	**B**			Encourage small lots, cluster housing, high-density housing, street connectivity, shared parking alleys and waste management.
G	**B**			Provide shopping and recreational opportunities that keep pace with housing.
G	**B**			Provide for increased housing affordability
G	**B**			Provide housing accessibility and diversity
G	**B**			Provide multiple transportation options.
G	**B**			Reduce auto-oriented land uses, or at least separate them from pedestrian-oriented uses.
G	**B**			Familiarize development team with the present development and eventual launch of LEED for Neighborhood Development (LEED-ND).
G	**B**			Familiarize development team with Form-based Codes as an appropriate vehicle to implement Smart Growth.
G	**B**			Update and evaluate plans, projects and regulations regularly.
G	**B**		**S**	Emphasize open space.
G	**B**	**I**	**S**	Join Smart Growth Network for access to an e-newsletter, online information and discussion forums on facilitating "smart growth".

Resources:

Smart Growth-
Codes that Support Smart Growth Development
http://epa.gov/livablecommunities/codeexamples.htm
National Resources Defense Council-
http://www.nrdc.org/buildinggreen/factsheets/smartgrowth.pdf
Smart Growth Online - http://www.smartgrowth.org/about/principles/default.asp
Smart Growth Leadership Institute - http://www.sgli.org/index.htm
Smart Growth Toolkit - http://www.smartgrowthtoolkit.net/

Form-based Code-
A Form-based Code for Cincinnati - http://www.planetizen.com/node/37267
Form-based Code Institute - http://www.formbasedcodes.org/resource.html

Local Government Commission-Form-Based Codes - http://www.lgc.org/freepub/community_design/factsheets/form_based_codes.html

Congress for New Urbanism-LEED for Neighborhood Development (LEED-ND) http://www.cnu.org/leednd

Southern Corridor Draft EIS, March 14 2003- www.udot.utah.gov/sc/06-Smart_Growth.pdf

US EPA- http://www.epa.gov/dced/pdf/bestdevprimer.pdf

References:

Natural Resources Defense Council. March 2007. Fact Sheets: If you build it, they will come: Americans want smart growth alternatives to conventional transportation. http://www.nrdc.org/buildinggreen/factsheets/smartgrowth.pdf accessed February 03 2009

The Urban Land Institute. February 2007. http://thegroundfloor.typepad.com/the_ground_floor/2007/02/mixed_developme.html. Accessed February 03 2009.

National Association of Home Builders. 2009. High Density development and Mixed-Use Development. http://www.nahb.org/generic.aspx?sectionID=628&genericContentID=17371. Accessed February 03 2009.

National Association of Home Builders. 2002. Smart Codes Smart Process Checklist. Land Development Services Department. N.W. Washington DC 20005

Project for Public Places. 2008. Mixed use Development: Creating a Place. http://www.pps.org/mixed_use/info/mixed_use_approach Accessed February 07 2009.

Strategy- Zoning to Decrease Carbon Emissions

Fast Facts-

- Reducing distance travelled to secure needed goods and services translates into increased income for families while reducing carbon emissions related to transportation.
- Research shows that a compact mixed-use development can reduce auto use by five to 15 percent (Duerksen, 2008).

Actions for: **G** (local governments), **B** (businesses), **I** (individuals / households) or **S** (schools)				
G				**Design ordinances that:**
G				Have sustainability as a primary focus.
G				Encourage and enable carbon neutral developments.
G				Encourage and enable mixed-use development to reduce driving distance for needed goods and services.
G				Protect the maximum green space.
G				Encourage and enable higher density residential areas with shorter blocks.
G				Encourage and enable residential and community gardens.
G				Encourage and enable walking and bicycling.
G				Encourage and enable local entertainment and recreation sites.
G				Encourage and enable the use of alternative energy sources such as solar panels, wind turbines and green roofs.
G				Protect access to the sun for solar panels.

Resources:

Tips for zoning to promote sustainable development- http://postcarboncities.net/node/2295.

Inclusionary zoning from Smart Growth- http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-iz.html

Free download of Smart Code to help in sustainable development- http://www.smartcodecomplete.com/learn/downloads.html.

Rocky Mountain Land Use Institute-Sustainable Community Development Code Beta Version 1.2- http://law.du.edu/index.php/rmlui/programs/sustainable-community-development-code/sustainable-community-development-code-beta-version-12

References:

Duerksen, C., 2008. Saving the world through Zoning. American Planning Association, 2008. Accessed on February 5, 2009 from http://postcarboncities.net/files/savingtheworld.pdf.

Office of Environmental Quality, 2008. Climate Protection Action Plan, The Green Cincinnati Plan. Office of Environmental Quality, City of Cincinnati, Ohio, June 19, 2008, Version 4.

Whole Building Design Guide, 2009. National Institute of Building Sciences. Accessed on January 9, 2009 from http://www.wbdg.org/about.php.

Strategy- Parking Area Development

Fast Facts-

- Large parking lots contribute directly to non-point source water pollution, which is the leading cause of water pollution in the U.S. Each acre of impermeable parking surface produces runoff of 25,000 gallons of water during a 1-inch storm (Sierra Club).
- Permeable asphalt/concrete parking lots reduce storm water management; water passes through into the ground aquifer, decreasing the need for expensive drainage systems (City of Toronto, 2008).
- The redesign of Fort Bragg's vehicle maintenance facility parking lot reduced impervious surface by 40%, increased parking by 20%, and saved $1.6 million (20%) on construction costs over a conventional design (North Carolina Stormwater Authority, 2008).
- American Power Solutions replaced 215 watt fixtures in the parking lot of an apartment complex with 140-58 watt fixtures at zero cost (APS, 2006).

Actions for: **G** (local governments), **B** (businesses), **I** (individuals / households) or **S** (schools)				
G	**B**	**I**	**S**	Build new parking areas away from wetlands and watercourses to limit environmental impact.
G	**B**	**I**	**S**	Reduce air conditioning by planting trees in parking area to keep vehicles cool.
G	**B**	**I**	**S**	Replace High Intensity Discharge (HID) lights with energy saving fluorescent or LED lights.
				Reduce impervious surfaces by:
G	**B**	**I**	**S**	Pave the minimum number of spaces required by zoning regulations.
G	**B**	**I**	**S**	Including small spaces for smaller cars.
G	**B**	**I**	**S**	Using pervious material where possible.
G	**B**	**I**	**S**	Including as much green space as possible between rows and at row ends.
				Improve storm water management by:
G	**B**	**I**	**S**	Install storm water treatment facilities to treat runoff.
G	**B**	**I**	**S**	Using rain gardens, bioswales and bioretention ponds onsite.

Resources:

Size and Surfaces of Parking Lots-

U. Conn. Extension Land Use Educator- http://nemo.uconn.edu/tools/publications/tech_papers/tech_paper_5.pdf

Indiana Living Green- http://www.indianalivinggreen.com/index.php?option=com_content&task=view&id=86&Itemid=107

Filtration System- http://aquashieldinc.com/

Greening Parking Lots- http://www.docuticker.com/?p=18723

Lighting Parking Lots- http://www.americanpowersolutions.com/parking_garage_lighting.html

Tips for Constructing Parking Lots- http://www.cenews.com/article.asp?id=227

Planting Trees- http://www.ext.vt.edu/pubs/trees/430-028/430-028.html

References:

American Power Solutions. Parking garages and parking lots. in American Power Solutions [database online]. USA, [cited February 6, 2009]. Available from http://www.americanpowersolutions.com/parking_garage_lighting.html (accessed February 8, 2009).

City of Toronto. Greening surface parking lots - porous asphalt pilot project. in City of Toranto [database online]. Canada, 2008 [cited February 6 2009]. Available from http://www.explace.on.ca/green/Porous%20Concrete%20Asphalt.pdf (accessed February 8, 2009).

Gibbons, Jim. 1999. *Parking lots.* USA: University of Connecticut, 5.

Strategy- Incentives for Green Development

Fast Facts-

- Incentives stimulate innovation within communities.
- Parkland, Florida offers a variety of incentives including cash rebates for energy efficient toilets and air-conditioners (AP, 2007).
- San Francisco, in 2008, will offer homeowners rebates of up to $5,000 for installing solar panels if they use a local contractor. Coupled with state and federal incentives, that could cut in half the $21,000 cost for an average household (AP, 2007).
- Baltimore offers at least $2,000 toward closing costs for people who buy new homes close to where they work. It is called the "Live Near Your Work" program (AP, 2007).
- Residents of Albuquerque, N.M., get fast-track building permits and other perks if they agree to make their homes more energy-efficient (AP, 2007).

Actions for: **G** (local governments), **B** (businesses), **I** (individuals / households) or **S** (schools)				
G				Provide fast tracking for building permits for energy efficient projects.
G				Provide tax incentives for sustainable practices, such as green roofs, etc.
G				Provide tax incentives to preserve green space.
G				Provide tax incentives for receiving LEED Certification
G				Give grants to organizations or individuals for green development.
G				Take advantage of grant opportunities for green development.
G				Provide incentives that encourage the use of alternative energy sources such as solar panels, wind turbines, and geothermal heating.
G	**B**			Take advantage of grant opportunities with public/private partnerships.
G	**B**			Provide information about grants that may assist in green development.
G	**B**			Provide low interest financing for homeowners who improve energy efficiency in their homes.
G	**B**			Subsidize the use of recycled products and energy-reducing products.
G	**B**		**S**	Reward innovative green developments in your community with public recognition.
			S	Conduct contests for students to compete in designing green developments.

Resources:

Green incentives and options from facilities.net- http://www.facilitiesnet.com/energyprocurement/article/Being-Green-Getting-Easier--3177

Ohio Incentives For Renewables and Efficiency- http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=OH&RE=1&EE=1

MSNBC- Cities offer incentives to save energy- http://www.msnbc.msn.com/id/22410962/

Seattle area Built Green Website- http://www.builtgreen.net/index.html

References:

Associated Press, 2007. Cities offer incentives to save energy. December 27, 2007, MSNBC. Accessed on February 12, 2009 from http://www.msnbc.msn.com/id/22410962/.

Strategy: Building Material Choices

Fast Facts-

- Building and construction activities worldwide consume 3 billion tons of raw materials each year or 40 percent of total global use. Using green building materials and products promotes conservation of dwindling nonrenewable resources internationally (CIWMB, 2008).
- Buildings that have been retrofitted using green materials have been seen to achieve 80% carbon reduction; fuel bills for residents could be reduced by 65% (Green Building Press, 2008).

Actions for: **G** (local governments), **B** (businesses), **I** (individuals / households) or **S** (schools)				
G	**B**	**I**	**S**	Use durable products that last longer than conventional products and require replacement less often.
G	**B**	**I**	**S**	Pick products that can be reused or recycled after they have served their purpose for the project.
G	**B**	**I**	**S**	Choose manufacturers that use resource-efficient processes.
G	**B**	**I**	**S**	Decrease transportation costs by using locally available materials.
				Use materials that:
G	**B**	**I**	**S**	Contain and advertise their recycled content.
G	**B**	**I**	**S**	Are natural, plentiful, or renewable.
G	**B**	**I**	**S**	Take advantage of salvaged, refurbished, or remanufactured supplies.
G	**B**	**I**	**S**	Are packaged in reusable or recyclable materials.

Resources:

Current green buildings in Ohio, from Green Energy Ohio-
http://www.greenenergyohio.org/page.cfm?pageID=261

Green building in Cincinnati, OH:
http://www.livegreencincinnati.com/articles/category/green-building

Green building materials and where to get them: http://www.green2green.org

Sustainable Building Sourcebook
http://www.austinenergy.com/energy%20efficiency/Programs/Green%20Building/Sourcebook/materials.htm

References:

(CIWMB) California Integrated Waste Management Board. 2008. Green Building Materials. USA, (cited February 5 2009). Available from http://www.ciwmb.ca.gov/greenbuilding/Materials/ (Accessed February 6, 2009).

Green Building Press. 2008. Green Retrofit Achieves 80% Carbon Reduction. USA. Available from http://www.greenbuildingpress.co.uk/article.php?category_id=1&article_id=36 (Accessed February 5 2009).

Strategy- Greening Landscape Practices

Fast Facts

- With wetlands, trees and downspouts, Indianapolis, reduced storm water flow into their combined sewer system, allowing them to reduce the diameter of their planned sewer pipes from 33" to 26", resulting in savings of over $300 million (American Rivers, 2009).
- By restoring the NAPA River channel and wetlands Napa, California, protected 2,700 homes from flooding, saving $26 million in flood damage each year, while creating new parks and open spaces (American Rivers, 2009).
- Green landscapes create jobs in landscaping, plumbing, engineering, building and designing. They also support stores and jobs connected with supply and manufacturing, such as for rainwater harvesting systems and permeable materials (American Rivers, 2009).

Actions for: **G** (local governments), **B** (businesses), **I** (individuals / households), **S** (schools)				
G	**B**	**I**	**S**	Preserve critical natural areas such as wetlands and streams.
G	**B**	**I**	**S**	Protect, enhance and promote the working landscape (open space, forests, farms) and greenspace through resource management and land trusts.
G	**B**	**I**	**S**	Certify your community as an NWF Community Wildlife Habitat to benefit wildlife.
G	**B**	**I**	**S**	Promote or create NWF Certified Wildlife Habitats in backyards to benefit wildlife.
G	**B**	**I**	**S**	Plant trees wherever possible to store carbon long-term.
G	**B**	**I**	**S**	Plant trees strategically on the east, west and southwest of buildings to shade from afternoon sun in summer and allow sun through in winter.
G	**B**	**I**	**S**	Use water-harvesting systems such as cisterns and rain barrels to collect grey water for landscaping use to decrease use of city water.
G	**B**	**I**	**S**	Decrease area in lawns.
G	**B**	**I**	**S**	Where lawns are necessary, plant "freedom" lawns, composed of several grass species or a mixture of grass, lilies, wildflower and ground cover, that require little care or watering.
G	**B**	**I**	**S**	Use permeable materials (cobble stones, bricks etc.) for the construction of sidewalks, pavements, and pathways.
G	**B**	**I**	**S**	Use only necessary lighting outdoors.
G	**B**	**I**	**S**	If lighting is needed, use solar lamps.
G	**B**		**S**	Promote nature-based recreation and tourist activities to develop an appreciation for nature and respect for the environment.
G	**B**		**S**	Promote educational programs about conservation, recreation and the preservation of wildlife.

Web Resources:

Natural area preservation-
http://www.mass.gov/?pageID=eoeeatopic&L=2&L0=Home&L1=Land+Use%2c+Habitats+%26+Wildlife&sid=Eoeea
The Working Landscape-
http://www.smartgrowthvermont.org/toolbox/issues/theworkinglandscape/
Harvesting rainwater- http://ag.arizona.edu/pubs/water/az1052/harvest.html
Gardens for wildlife- http://www.nwf.org/gardenforwildlife/
Planting trees- http://www.colostate.edu/Dept/CoopExt/4DMG/Trees/beatheat.htm
Permeable materials- http://www.sfaa.org/0706fabrega1.html
Promoting educational programs
http://www.mass.gov/?pageID=eoeeahomepage&L=1&L0=Home&sid=Eoeea
http://ohio.sierraclub.org/miami/index.html
Promoting recreation/tourism
http://www.mass.gov/?pageID=eoeeahomepage&L=1&L0=Home&sid=Eoeea
Lawns- http://www.enfo.ie/leaflets/Sustainable%20Lawn%20Management.pdf

Local connections
Educational Programs http://www.ci.montgomery.oh.us/landscaping_workshop.htm

http://bygl.osu.edu/index.php/bygl-newsletters/industry-insight/186-july-17-2008/383-a-rain-gardenlandscape-water-management-manual-for-southeast-ohio-under-development-
Landscape Design http://www.helpfulgardener.com/landscape/04/ohio.html
Rain Garden http://www.hcswcd.org/newsltr/MSDManualDraft.pdf
http://www.indianaeconomicdigest.net/main.asp?SectionID=31&SubSectionID=61&ArticleID=45540
http://www.hamiltonswcd.org/sitebuildercontent/sitebuilderfiles/raingarden.pdf
Wildlife Habitats http://www.hamiltoncountyparks.org/giftshop/books.htm
Grants http://www.hamiltoncountyohio.gov/administrator/bsi/grants/ManualApril2006.pdf
http://www.epa.state.oh.us/pic/nr/2001/nov/oeef-wal.html

References

American Rivers. Our nation's crumbling water infrastructure. in American Rivers [database online]. USA, 2009 [cited February, 2009 2009]. Available from http://www.americanrivers.org/site/PageServer?pagename=AR7_GreenInfrastructure_Background (accessed February 9, 2009).

Schrock, Denny. 2009. Beat the heat with landscape plants. *In* Colorado State University [database online]. Denver. CO. USA, 2009. Available from http://www.colostate.edu/Dept/CoopExt/4DMG/Trees/beatheat.htm (accessed February 9, 2009).